

AMENDMENT UNDER 37 C.F.R. § 1.116
U.S. Appln. No. 09/493,091

REMARKS

Claims 1-20 are all the claims pending in the application. By this Amendment, Applicant amends claims 1, 8, and 20 to further clarify the invention. In addition, Applicant rewrites claim 10 into independent form.

Summary of the Office Action

Claims 1-9, 11-17, 19, and 20 presently stand rejected. In particular, claims 1, 2, 5, and 8 are rejected under 35 U.S.C. § 102 and claims 1-4, 6, 7, 9, 11-17, 19, and 20 are rejected under 35 U.S.C. § 103(a). Claims 10 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form.

Claim Rejections under 35 U.S.C. § 102

The Examiner has rejected claims 1, 2, 5, and 8 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,067,179 to Roberts et al. (hereinafter “Roberts”). Applicant respectfully traverses in view of the following comments.

Of the rejected claims, only claim 1 is independent. Independent claim 1, among a number of unique features, recites:

each one of the set of channel regenerators regenerates only a predetermined respective group of channels, each respective group forming a non-overlapping subset of a set of channels to be regenerated, and each channel of the groups is predetermined based on channel wavelength, and wherein each channel regenerator is positioned at a predetermined distance on the optical line from other channel regenerators from said at least one set of channel regenerators.

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That is, the regenerator claimed in claim 1 receives a set of channels out of which only a predetermined subset is regenerated.

The Examiner asserts that claim 1 is directed to a multichannel wavelength-division multiplex fiber optic transmission system and is anticipated by Roberts. In particular, the Examiner asserts that Robert's bidirectional amplifier comprising "a set of channel regenerators 40" are equivalent to having a regenerator for a predetermined set of channels as set forth in claim 1 (see page 2 of the Office Action). Applicant has carefully studied Roberts teaching of the block 40 having a regenerator for the blue channels and a separate regenerator for the red channels, which are not similar to a regenerator regenerating only a predetermined subset of channels, which is positioned at a predetermined distance from the other regenerators.

Roberts discloses inserting a four-port WDM router 41 into a fiber carrying bidirectional WDM signals. For example, the signals in the "Blue" band arrive, for example, at port 11 on fiber 1', and the signals in the "Red" band, which are from a different direction, arrive at port 12 on fiber 1. These signals exit at a port 13 and are routed by WDM splitter 41 in the same direction from port 13 to the input of a preamplifier 42, then to a dispersion compensating module 43. A three-port WDM splitter 44 separates the signals according to their wavelength (which is determined based on the signal's direction of propagation) and routes them to receivers Rx1 and Rx2 of block 40. After regeneration or add-drop multiplex functions are performed in block 40, the signals are passed to two transmitters Tx1 and Tx2. From the two transmitters, the signals are combined with a three-port WDM splitter 45, and passed through another dispersion compensation module 46, if needed, and then amplified by a post-amplifier 47. The four-port

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WDM splitter 41 receives the amplified signals at port 14 and inserts these signals into the two fibers in the appropriate directions (Fig 4; col. 7, lines 44 to 64).

That is, Roberts discloses a block 40, which regenerates signals differently depending on their respective directional propagation. In Roberts, however, each signal is regenerated. That is, the block 40 has a regenerator for each of the received signals. In other words, if the Examiner equates block 40 to a regenerator as set forth in claim 1, then Roberts fails to teach or suggest regeneration of a predetermined subset of channels. Instead, in Roberts, some sort of regeneration is performed on each signal received (e.g., col. 7, lines 56 to 58; col. 10, lines 17 to 22).

Furthermore, although the regeneration performed may be separate, e.g., only a predetermined number of channels are regenerated by the red generator and only a predetermined number of channels are regenerated by the blue generator, each block 40 will perform the regeneration of all channels. That is, the red generator and the blue generator are positioned in the block 40 and not at a predetermined distance from one another on the transmission line. In short, the block 40 has regenerators for all of the channels, and does not teach or suggest regenerating only some of the channels, and the regenerators of the block 40 are not positioned at a predetermined distance from one another on the optical line but instead are part of the block 40.

Therefore, “wherein each one of the set of channel regenerators regenerates only a predetermined respective group of channels, each respective group forming a non-overlapping subset of a set of channels to be regenerated, and each channel of the groups is predetermined

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based on channel wavelength, and wherein each channel regenerator is positioned at a predetermined distance on the optical line from other channel regenerators from said at least one set of channel regenerators,” as set forth in claim 1 is not suggested or taught by Roberts, which lacks having a regenerator for a predetermined respective group of channels, where the group is a non-overlapping subset of a set of channels to be regenerated and where each regenerator is positioned at a predetermined distance on the optical line from the other regenerators. For at least these exemplary reasons, Applicant respectfully submits that independent claim 1 is patentably distinguishable from (and patentable over) Roberts. Applicant, therefore, respectfully requests the Examiner to reconsider and withdraw this rejection of independent claim 1. Also, Applicant respectfully submits that claims 2, 5, and 8 are allowable at least by virtue of their dependency on claim 1.

In addition, dependent claim 8 recites: “wherein a channel regenerator comprises a demultiplexer and a multiplexer, wherein the respective predetermined group of channels is demultiplexed and regenerated by the channel regenerator and rest of the demultiplexed channels are not regenerated in the channel regenerator.” The Examiner maintains that Roberts discloses demultiplexing channels and having some channels regenerated by the red regenerator and some channels are not regenerated by the red regenerator (see pages 2-3 of the Office Action).

Applicant respectfully submits that claim 8 depends on claim 1. Claim 1 requires each regenerator to only regenerate its respective predetermined group of channels. Accordingly, if the Examiner maintains that block 40 of Roberts is equivalent to a regenerator as set forth in claim 1, then Roberts fails to teach or suggest having a regenerator where some signals remain

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not regenerated. That is, claim 8 requires “rest of the demultiplexed channels are not regenerated in the channel regenerator.” In other words, the block 40 of Roberts must not regenerate the rest of the channels. In Roberts, however, all channels will be regenerated either by the blue regenerator or by the red regenerator. As explained in greater detail above, in Roberts, the block 40 regenerates all channels. In short, Roberts fails to disclose all of the unique features of claim 8. For at least this additional reason, Applicant respectfully submits that claim 8 is patentably distinguishable (and is patentable over) Roberts.

Claim Rejections under 35 U.S.C. § 103

Next, Applicant respectfully traverses the § 103 rejections in view of the following comments.

A. Claims 1-4, 15-17, 19, and 20

Claims 1-4, 15-17, 19, and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,370,300 to Eggleton et al. (hereinafter “Eggleton”) in view of U.S. Patent No. 6,400,498 to Shimomura et al. (hereinafter “Shimomura”). Applicant respectfully traverses this rejection in view of the following comments.

Applicant submits herewith a Declaration under 37 C.F.R. § 1.131 (hereinafter “Declaration”) to swear behind Eggleton. The Declaration shows a completion of the invention as defined by claims 1-4, 15-17, 19, and 20 prior to February 18, 1999 (filing date of the Eggleton patent). Applicant respectfully asserts that the Declaration (along with the supporting Exhibit A) effectively removes Eggleton as prior art. Accordingly, this rejection of claims 1-4, 15-17, 19, and 20 under 35 U.S.C. § 103(a) is overcome, as Shimomura does not and cannot

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substitute for the teachings of Eggleton. Therefore, Applicant respectfully requests the Examiner to reconsider and to withdraw the rejection of claims 1-4, 15-17, 19, and 20.

B. Claim 6

Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Roberts in view of U.S. Patent No. 6,396,607 to Cao (hereinafter “Cao”). Applicant respectfully traverses this rejection with respect to the dependent upon claim 1, claim 6. Applicant has already demonstrated that Roberts does not meet all the requirements of independent claim 1. Cao is relied upon only for its teachings of a synchronization unit (see page 4 of the Office Action). Clearly, Cao does not compensate for the above-identified deficiencies of Roberts. Together, the combined teachings of these references would not have (and could not have) led the artisan of ordinary skill to have achieved the subject matter of claim 1. Since claim 6 is dependent upon claim 1, it is patentable at least by virtue of its dependency.

C. Claim 7

Claim 7 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Eggleton and Shimomura in view of U.S. Patent No. 6,108,125 to Yano (hereinafter “Yano”). Applicant respectfully traverses this rejection with respect to the dependent upon claim 1, claim 7. As explained above, Applicant respectfully asserts that the Declaration (along with the supporting Exhibit A) effectively removes Eggleton as prior art, thereby overcoming this rejection of claim 7 under 35 U.S.C. § 103(a). Shimomura and Yano, taken alone or in any conceivable combination, do not and cannot substitute for the teachings of Eggleton. Therefore, Applicant respectfully requests the Examiner to reconsider and to withdraw this rejection of claim 7.

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D. Claim 9

Claim 9 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Roberts in view of “Fiber Gratings Based Optical Add/Drop Multiplexer with Low Interferometric Crosstalk”, Internal Conference on Communication Technology, ICCT’98, October 22-24, 1998 to Bo et al. (hereinafter “Bo”). Applicant respectfully traverses this rejection with respect to the dependent upon claim 1, claim 9. Applicant has already demonstrated that Roberts does not meet all of the requirements of independent claim 1. Bo is relied upon only for its teachings of a four-channel WDM transmission system, which uses fiber grating (see pages 5-6 of the Office Action). Clearly, Bo does not compensate for the above-identified deficiencies of the Roberts. Together, the combined teachings of these references would not have (and could not have) led the artisan of ordinary skill to have achieved the subject matter of claim 1. Since claim 9 is dependent upon claim 1, it is patentable at least by virtue of its dependency.

E. Claims 11-13

Claims 11-13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Roberts in view of U.S. Patent No. 6,023,366 to Kinoshita (hereinafter “Kinoshita”). Applicant respectfully traverses this rejection with respect to the dependent upon claim 1, claims 11-13.

Applicant has already demonstrated that Roberts does not meet all of the requirements of independent claim 1. Kinoshita is relied upon only for its teachings of a four-channel WDM transmission system (which uses repeaters to amplify all channels in the system) and its teachings of a supervisory channel (see pages 5-6 of the Office Action). Clearly, Kinoshita does not compensate for the above identified deficiencies of Roberts. Together, the combined teachings of these references would not have (and could not have) led the artisan of ordinary skill

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to have achieved the subject matter of claim 1. Since claims 11-13 are dependent upon claim 1, they are patentable at least by virtue of their dependency.

Claim 14

Claim 14 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Roberts in view of U.S. Patent No. 5,847,862 to Chraplyvy et al. (hereinafter “Chraplyvy”). Applicant respectfully traverses this rejection with respect to the dependent upon claim 1, claim 14. Applicant has already demonstrated that Roberts does not meet all the requirements of independent claim 1. Chraplyvy is relied upon only for its teachings of placing amplifiers between the regenerators (see page 6 of the Office Action) and as such clearly fails to cure the deficient teachings of Roberts. Together, the combined teachings of these references would not have (and could not have) led the artisan of ordinary skill to have achieved the subject matter of claim 1. Since claim 14 is dependent upon claim 1, it is patentable at least by virtue of its dependency.

Allowable Subject Matter

Applicant thanks the Examiner for indicating that claims 10 and 18 would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. Applicant rewrites claim 10 into its independent form including all the limitations of the base claim. In view thereof, Applicant respectfully requests the Examiner to now allow claim 10. With respect to claim 18, Applicant respectfully holds the rewriting of this claim in abeyance until the arguments presented with respect to independent claim 1 have been reconsidered.

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Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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